Letter from Professor Watson to Mr. Hind, Superintendent of the "Nautical Almanac."

I doubt not that you will be interested to receive more precise information about the observations which I made on July 29 than has yet been published.

Upon my return from the Eclipse Expedition, in order to be able to answer numerous inquiries which were addressed to me, I made an approximate reading of the circles upon which I had marked the positions observed, and the resulting places of two new stars which I observed were immediately communicated to several astronomers in this country and in Europe, and also to the *American Journal of Science*. As soon as I had the leisure, I made a more careful determination, and I noticed, upon revolving the alidade of the reading-circle, that the circle to be read had a very considerable excentricity, as it had been hurriedly mounted. Since there would, in any event, be an error of excentricity to be determined in changing the hour-circle from the instrument to the reading-circle, I did not remount it, but determined the necessary corrections by means of the four readings upon the Sun.

I have made ten readings upon each mark, backward and forward, so that each reading is an independent determination. The results derived from the mean of these readings are shown by the following:—

Chronometer Times. By Newcomb's. h	m	s	By Watson's. h	m	s	Washington M.T. h	m	s	Object observed.	Circle Reading. °	′	′	
			4	39	50	5	7	31	Sun	165	31·6	±	0·7
10	29	15				5	16	37	(*a*)	161	1·6	±	0·4
10	30	24				5	17	46	(*b*)	156	7·5	±	0·5
			4	55	10	5	22	51	Sun	161	38·3	±	0·5
			5	4	50	5	32	31	Sun	159	7·0	±	0·3
			5	46	55	6	14	36	Sun	148	21·7	±	0·7

By comparing the mean of the second and third readings upon the Sun with the extreme readings, I have obtained the following expression for the correction for excentricity:—

$$R_c = R + 103'.7 \sin (R + 63^\circ.2);$$

so that we have

Washington M.T. h	m	s	Object observed.	Corrected Circle Reading. °	′
5	7	31	Sun	164	13·7
5	16	37	(*a*)	159	49·3
5	17	46	(*b*)	155	1·8
5	22	51	Sun	160	25·2
5	32	31	Sun	157	57·2
6	14	36	Sun	147	27·4

From these I derive the following differences of right ascension between (*a*) and (*b*) and the Sun :—

From	(*a*)−⊙ Δα m s	(*b*)−⊙ Δα m s
S_1 =	−8 31·6	−26 32·6
S_2 =	−8 37·6	−26 38·2
S_3 =	−8 25·6	−26 26·6
S_4 =	−8 31·5	−26 32·4

The differences of declination previously determined were respectively −0° 22′ and −0° 35′; and hence we have

Washington M.T.		Planet−⊙ Δα m s	Δδ ° ′	Apparent α h m s	δ ° ′
1878 July 29 5 16 37	(*a*)	− 8 32	−0 22	8 27 24	+18 16
29 5 17 46	(*b*)	−26 32	−0 35	8 9 24	+18 3

The magnitude of (*a*) was 4 to $4\frac{1}{2}$; that of (*b*) about $3\frac{1}{2}$. They were probably really brighter because the illumination of the sky was not considered in the estimates.

Before I came to reduce the observations I thought that the star (*b*) might possibly have been *ζ Cancri*, because I did not see the latter also. The sweep was not extended beyond (*b*), and just as I had recorded its place, the Sun came out. The time available for the observations was so short that it was not possible to get more data than I have given above. I did see *θ Cancri* as well as (*a*), and the place of the latter is sure. I consider that of (*b*) to be also sure, and hence that it is a new star.

Ann Arbor, 1878, *Sept.* 3.

Note on Brightness.

By R. A. Proctor, Esq., Hon. Fellow, King's College, London.

I regret that I should have again misunderstood Mr. Stone. I thought he referred only to the light-gathering power of the 26-inch telescope: for he gave no reasons, and I should have expected reasons, for a proposition certainly not self-evident. He asked simply why the satellites of *Mars* can be seen with large telescopes, though invisible with small ones. I think it unlikely that the visibility of the satellites of *Mars* with large telescopes depends at all on the smaller size of the diffraction image. The quantity of light forming the image is the chief point to be considered (I observe that Prof. Newcomb, in estimating the size of